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AUTHOR Salesi, Rosemary A.; Garwood, Sam S.
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ABSTRACT

This handbook examines sources of information useful to educators and educational consultants who wish to learn about innovative practices and/or solutions to educational problems in other schools. A discussion of information storage describes the access to information in reports, periodicals, unpublished reports, and other materials through such special publications as indexes, bibliographic reviews, annual reviews, and yearbooks; some of the more commonly used of these publications are listed and described. Guidelines for defining the topic of an information search are provided to assist in the selection and examination of appropriate sources for the information desired. A description of the services provided by the federally funded Educational Resources Information Center (ERIC) data base includes the monthly index to its document collection, a monthly review of articles in professional journals, and the availability of items in the document collection. The advantages and disadvantages of computerized searches of the educational literature are discussed, and the computer search process is briefly described. A list of selected readings is included. (CMV)

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I N F O R M A T I O N R E T R I E V A L

Rosemary A. Salesi, Ed.D.

and

Sam S. Garwood, M.L.S.

DIFFUSION OF INNOVATIONS
HANDBOOK SERIES

Edward P. Caffarella, Ph.D.
Editor

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University of Maine at Orono
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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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ACKNOWLEDGMENTS

This handbook is part of a series of handbooks on the diffusion of innovations within educational settings. The titles in the series are Needs Assessment, Information Retrieval, and Packaging for Dissemination.

The preparation of the handbooks was supported in part by the Vocational Education Act, 1968, with a Research Contract Part C, from the Bureau of Vocational Education and by the Elementary and Secondary Education Act of 1974, Part IV-C, through the State Department of Educational and Cultural Services (SDECS), Augusta, Maine. The opinions expressed herein do not necessarily reflect the position or policy of the SDECS and no official endorsement by the U.S. Office of Education should be inferred.

The photograph on the cover of this handbook is from the photograph collection of the Kennebunkport Historical Society.

Many individuals assisted in the execution of this project. Particular thanks go to John Moran of the Bureau of Vocational Education for his encouragement and advice throughout the project. Many other individuals, notably Lois Jones and Richard Riley, within the Department of Educational and Cultural Services also assisted in the execution of the project.

The project staff included Andrew Abbott, Nancy Andrews, Edward Caffarella (Principal Investigator), Rosemary Caffarella (Associate Principal Investigator), Sam Garwood, James Hart, Anne Pooler, and Rosemary Salesi. Special thanks to Phyllis Thibodeau for the typing of the handbooks.

The exchange of information on educational innovations is extremely important if schools in one district are to gain from the innovations in another district. A wealth of information on these educational innovations has been documented in published materials. By utilizing this information in planning, educators can benefit from the successes and failures of others. Thus, education can be improved by building upon the experience of other educators. Without using this information educators will unkowingly continue to "recreate" the same information.

The retrieval of information on educational innovations requires specialized skills. The publications on educational innovations tends to appear in sources other than the normal reference sources.

The purpose of this information retrieval handbook is to examine the sources of information useful to educators and educational consultants. These sources of information can provide information on how other schools have solved educational problems.

Information Storage

Information can be stored in any number of devices. Many items, which are used daily by almost everyone, are information storage devices. The morning newspaper is an

information storage device containing information ranging from the World Series score to the price of a share of IBM stock. Ranchers use a brand to store information about cattle ownership. A phonograph record stores the voice of a singer or the sound of a band. A traffic sign stores information which provides for the orderly movement of traffic.

Many information storage technologies which are commonplace today are very recent inventions. Photography is just over a hundred years old. Magnetic tape recording is less than forty years old. Electronic computers are only thirty-two years old. These and other modern technologies enable people to store information much more easily than was possible in the past.

Reasons for Storing Information

Information is stored for many reasons. Some information is produced in one place but "consumed" elsewhere. The World Series may take place in a distant city, making it impossible for most people to attend. Newspaper, radio and television serve to store the game information in a form that can be brought to sports fans in other places.

Some information may not be needed until a later date. On each paycheck an employee receives a notification of the federal taxes withheld from the check. For most people this information is not needed until the following April when completing the income tax form. The withholding information is stored by the employer until it is needed at a later time.

Some information must be used simultaneously by several individuals. There is, therefore, a necessity to store several copies of the same information. The telephone book can be used by several people at the same time. If there were only one copy of a telephone book for an entire city the users would stand in line for hours to look up a listing. Since there is a book adjacent to each telephone this time is reduced to minutes.

Recent years have brought a tremendous increase (sometimes referred to as an information explosion) in the quantity of information being produced and stored. Approximately 80,000 new titles (books, theses, government publications) are published each year in the U. S. alone; the number of journal articles is in the hundreds of thousands. In the field of education alone, approximately 35,000 new articles and reports are indexed each year by the Educational Resources Information Center.

No individual could possibly read everything that is published in a specialized field, let alone other fields. To overcome this problem libraries have developed indexes and procedures so that a user can quickly identify the most important information relating to specific topics. To use the indexes effectively the user should know something about the various types of information sources and their relationships to each other.

Publication of Information

The same information may be stored in a variety of forms. When an idea is initially being developed it will literally be stored in an individual's brain. As the idea is developed the recorded information will evolve through a series of stages from unpublished reports to periodical articles to books to encyclopedic summaries.

Doyle and Grimes (1976) have described this evolution as a bibliographic chain. This chain is shown in figure one shows the evolution of an idea into a book. The evolution takes place over a period of time. An abridged version of the description of the bibliographic chain by Doyle and Grimes is included in Appendix A of this handbook.

The first two levels of the bibliographic chain are the ideas and the human resources. These tend to be unrecorded sources of information which are received directly from the individual developing the idea.

Institutional resources are another important level of the chain. They function as clearinghouses within institutions and help people to identify resources within an institution. The Maine Facilitator Center is an institutional resource which encourages the adoption by Maine schools of successful innovative programs developed with U.S. Office of Education funding.

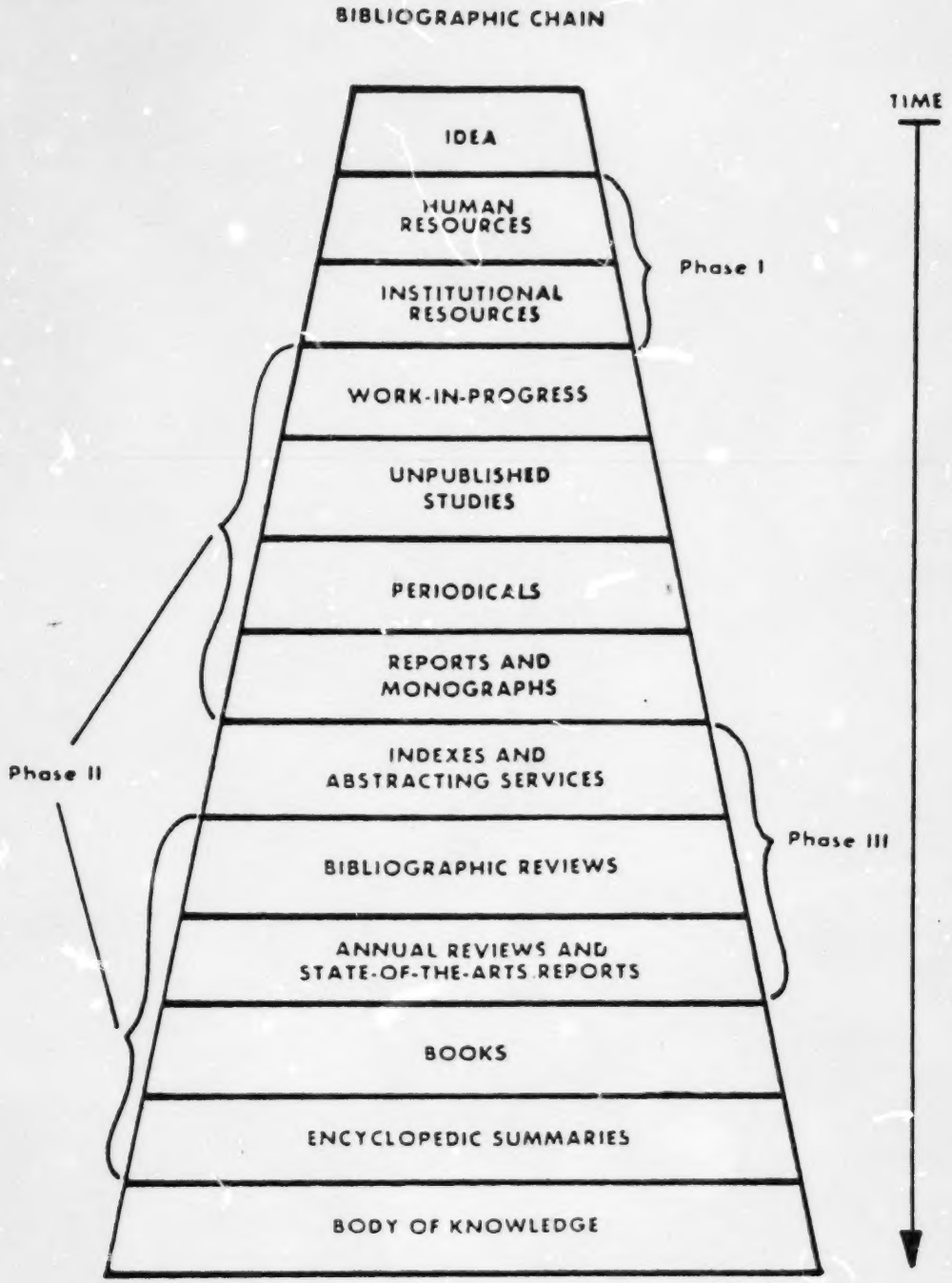

Figure 1. The Bibliographic Chain as conceived by Doyle and Grimes (1976).

Unpublished studies on innovative education projects are available. The best source for these reports is the school district which conducted the project. A secondary source for such reports is the agency which provided the funds for the project. A sample cover page and table of contents for such a report is included in Appendix B.

Periodicals tend to be the first place where a project report is readily available in a published form. An article on the project included in Appendix B was published in the December 1974 issue of the American Vocational Journal. The first page of the article has been reproduced and is included in Appendix C.

Reports and periodical articles are indexed and abstracted in a number of different publications. Some of the more common educational indexes and abstracts are listed.

Education Index. Wilson, 1932- Monthly. Indexes selected educational journals, books, pamphlets, yearbooks, conference proceedings, etc. No annotations; purely a locating tool.

Current Index to Journals in Education. (CIJE). CCM Information Corp., 1969- Monthly. An ERIC product. Indexes more journals than Education Index and provides descriptive annotations. Less current than Education Index.

U.S. Educational Resources Information Center, Resources in Education. Government Printing Office, 1966- Abstracts and indexes government-sponsored research reports and other research studies covering all aspects of education. Most of the documents indexed are not "published" in the usual sense, but are available on microfiche from the ERIC Document Reproduction Service at minimal cost. By far the most useful source for accessing the educational report literature.

Abstracts of Instructional Materials in Vocational and Technical Education. (AIM) Quarterly.
Indexes and abstracts materials pertaining to instruction collected by the ERIC Clearinghouse for Vocational and Technical Education. Many of these items are not covered by Resources in Education.

Abstracts of Research and Related Materials in Vocational and Technical Education. (ARM) Quarterly.
Same as the preceding item, except covers research materials.

Educational Administration Abstracts. University Council for Educational Administration, 1960-
Covers about 100 journals in education and related fields.

Exceptional Child Education Abstracts. Council for Exceptional Children, 1969- Quarterly.
All aspects of special education. Indexes many items not indexed by the ERIC system.

Psychological Abstracts. American Psychological Association, 1927- Monthly.
Includes coverage of educational psychology, developmental psychology, guidance and counseling. Considerable overlap with education Index and CIJE in these areas, but provides access to some items not accessible through the education indexes.

U.S. Superintendent of Documents, Monthly Catalog of United States Government Publications, 1895-
Current listing, with subject index, of publications issued by all branches of the federal governments.

Educators Guide to Free Filmstrips. Educators Progress Service. Annual
Listing by curriculum areas of title, content description, ordering information and other specifics for each filmstrip. EPS publishes similar guides for films, teaching aids, guidance materials, etc.

There is duplication between some of the sources. There are, however, articles and reports which may appear in only one of the above publications.

The three indexes most widely used to locate articles and reports in education are the Education Index, the Current Index to Journals in Education (CIJE), and Resources in Education (RIE). The citation for the article "Mt. Ararat Finds the Keystone" from the Education Index has been reproduced in Figure 2. This was included in the Spring, 1975

PLACEMENT
Career education: the school's responsibility for placement and follow-up: symposium. Il Agric Educ Mag 45:267-73 Je '73
Cooperative education and placement as an integral part of academic and career advisement. J. L. Arnette. Coll & Univ 50:85-8 Fall '74
Four marks for effective counseling in the '70s: placement and career counselors. R. N. Bolles. J Coll Placement 34:22-9+ Summ '74
Immediacy. J. C. Hurst and J. Rosson. J Coll Placement 35:53-4 Fall '74
Innovative approach to job placement in Dayton schools. W. Chamberlin and others. Phi Delta Kappan 56:615 My '75
Job placement director: a job for the DE coordinator? T. R. White and H. Marley. Bus Educ Forum 29:19-20 D '74
Job placement: keystone of career development. R. A. Wasil. Am Voc J 49:32 D '74
Mt. Ararat finds the keystone: Maine. K. Gray. Am Voc J 49:33-6 D '74
Placement: the neglected resource for career and curriculum planning. R. F. Menke and D. Regner. J Coll Placement 35:62-6 Wint '75
Questions & issues: how a placement director and recruiter view priorities. R. A. Stewart; P. E. Veruki. J Coll Placement 34:34-8+ Summ '74

Figure 2. Sample citation from Education Index.

issue of Education Index. This same article was also indexed in the July, 1975 issue of CIJE. This citation is reproduced in Figure 3.

EJ 112 165 CE 502 544
Mt. Ararat Finds the Keystone Gray, Ken.
American Vocational Journal, v49 n9, pp33-6, Dec '74

*Job Placement, *School Services, *Program Descriptions, *Rural Schools, *Small Schools, Secondary Education, Rural Areas, Vocational Counseling, Team Training, School Community Relationship

With two alternate approaches to make sure the needs of all students are met, a consolidated school in rural Maine demonstrates what can be done with school-based job placement. The basic premise is that effective placement depends on a personal, trusting relationship between counselor and student. (Author/AJ)

Figure 3. Sample citation from CIJE.

The complete final report of this project was also indexed in RIE. This citation in Figure 4 is from the February, 1976 issue of RIE.

ED 112 128 95 CE 004 914
Gray, Kenneth C.
An In-School Job Placement Service for Secondary School Students. Final Report.
Mount Ararat School, Topsham, Maine.
Spons Agency—Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C.; Maine State Dept. of Educational and Cultural Services, Augusta. Bureau of Vocational Education.
Pub Date 30 Jun 75
Note—73p.; Portions of the Appendix have been retyped so that they will reproduce in microfiche
EDRS Price MF-$0.76 HC-$3.32 Plus Postage
Descriptors—Educational Legislation, *High School Students, Job Application, *Job Placement, *Program Descriptions, Program Development, Secondary Education, Student Employment, Student Placement
Identifiers—Maine
A job placement model, integrated into an existing guidance program, was developed, field tested, and evaluated in the Mt. Ararat School, Maine. The project focused on nine priorities related to job placement, job development, job-seeking and keeping skills, and followup services. Objectives, procedures, and methods of evaluation were set up for each priority. The process was divided into five major areas in which specific activities were conducted: needs assessment, job development, student development and placement, followup (post-graduate and undergraduate), and evaluation. A placement team approach was developed as a model for small schools with limited guidance staff. A successful program was established which led to the writing of legislation to provide similar services to all Maine high school graduates. Conclusions relate to each of the five activity areas and show that the need for job placement among high school students can best be met by existing guidance staff or by a placement team. Five recommendations for promoting job placement in secondary schools are stated. Appended materials (24 pages) include forms used in assessment, development, and evaluation activities; a copy of the legislation; and a 20-item bibliography. (MS)

Figure 4. Sample citation from RIE.

Bibliographic reviews provide some of the same kinds of information for books that CIJE and RIE provide for periodicals and report literature. The following list contains some examples of the bibliographic reviews in education.

Berry, Dorothea M. A Bibliographic Guide to Educational Research. Scarecrow, 1975.
A library-oriented guide to more than 500 reference sources in education. Brief annotations describe the content of most sources cited.

International Reading Association. Guide to Information Sources in Reading. 1972.
Cover journals, conference proceedings, reference books, associations and information centers in reading and related areas. Brief, descriptive annotations for most items.

Seventh Mental Measurements Yearbook. Edited by Oscar K. Buros. Gryphon Press, 1972.
Commercially available educational, psychological and vocational tests with reviews. Over 12,000 references on construction, use and validity of specific tests. Covers 1964-70.

Tests in Print II. Edited by Oscar K. Buros. Gryphon Press, 1974.
"Comprehensive bibliography of all known tests published as separates for use with English-speaking subjects." Also serves as a classified index to the contents of Mental Measurements Yearbooks I-VII.

These publications serve as retrieval tools for locating books and other materials dealing with specific topics.

Annual reviews and yearbooks provide a yearly review of a particular field. The following list contains examples of the annual reviews pertaining to education.

Association for Supervision and Curriculum Development. Yearbook. 1948-
Each yearbook focuses on one topic in educational administration or curriculum. Articles by various authors, with bibliographies. A state-of-the-art report on the topic covered.

National Council for the Social Studies. Yearbook. 1931-
Each yearbook summarizes the recent research and literature on a particular topic or theme.

U.S. Office of Education National Center for Educational Statistics. Digest of Educational Statistics. 1962-
Statistical information on all aspects and levels of education.

Standard Education Almanac. Academic Media. 1969-
Another statistical guide to all levels and facets of education, e.g., enrollment trends, sizes of school districts, SAT scores, general summaries on topics of current interest.

Encyclopedic summaries form the final link in the bibliographic chain. They are not good sources for current research, but they contain well-established information which has stood

the test of time. Examples of educational encyclopedias include:

Encyclopedia of Education. Macmillan, 1971. 10 vols.
Long scholarly articles on all major subject areas in education. Most articles include bibliographies.

Good, Carter V. Dictionary of Education. 3rd ed. McGraw-Hill, 1973.
Scholarly definitions of more than 30,000 terms in education and related areas.

Travers, Robert M. W. Second Handbook of Research on Teaching. Rand-McNally, 1973.
42 chapters devoted to broad areas of research on teaching, e.g., "Teaching Vocational Skills," "The Assessment of Teacher Competence". Includes bibliographies.

Information on educational innovations is stored in a variety of different ways in many publications. The potential user of this information should be aware of the different ways that information is stored so that the retrieval becomes an efficient process.

The Retrieval Process

Defining the question

This step is critical to a successful information search. An information need expressed in a vague or general way will usually lead to wasted time and poor results. For example, a topic should not be expressed as "information on the elementary school curriculum" if in fact the information wanted has to do with teaching the concept of subtraction to primary school students with learning disabilities.

A precise statement of an information need is particularly important when one person is seeking information requested by

another. Doyle and Grimes (1976) suggest the use of a checklist of questions to aid in the definition process:

1. What is being sought? Specifically, what is the topic? What keywords are descriptive of the information desired?
2. What types of information resources are desired? Human resources? Institutional resources? Print materials? What bibliographic format? Media materials?
3. What relevant information is already available?
4. What is the level of interest? Practical? Theoretical? An Overview? An in-depth treatment?
5. What type of person needs the information? Student? Practitioner? Layperson?
6. What time limits are appropriate in regard to the age of the information? Current or retrospective information? If retrospective, how far back? How immediate is the need for this information?
7. What physical formats will be most convenient? The original document? Duplicated copies of a part of the document? Microfilm copy? Media formats such as film or an audio recording?
8. What is the scope of the information sought? An overview of all relevant resources? Referral to selected resources? A synthesis or relevant information? An in-depth analysis of relevant information?

9. What other limitations are there? Geographic location of the desired resources? Financial limitations? Foreign language limitations?
10. How will the resulting information be applied? Scholarly inquiry? Administrative decision-making? Research and development activities? Person exploration? To fulfill academic requirements? Professional growth?

Only after the question has been carefully defined should one go on to the next step.

Selection and examination of appropriate sources

The defined and delimited question statement will determine which sources are potentially useful. For example, if one wants only very recent information on a topic, encyclopedias and books are generally not good sources. For a project in progress, it may be necessary to consult the individuals conducting the project. A yearbook may be the best source for a statistical topic. As stated above, in order to retrieve information efficiently it is necessary to be familiar with the various types of information sources and their characteristics.

In most cases where extensive information is wanted, the searcher will want to use indexes, abstracts or bibliographies as guides to journal articles or other sources. These bibliographic tools make it possible to retrieve in a short time the relevant articles and reports from a huge mass of material.

After selecting and examining appropriate sources, the user may need to go back and redefine the question on the basis of information already found, and then to select and examine additional sources. The process continues until the information need has been satisfied or until further searching would not be worthwhile.

The Far West Laboratory for Educational Research and Development has produced an excellent instructional package which includes a section on narrowing the research question. The package is entitled The Educational Information Consultant: Skills in Disseminating Educational Information.

Educational Resources Information Center

The Educational Resources Information Center (ERIC) is a national information system designed and developed by the U.S. Office of Education, and now supported and operated by the National Institute of Education. It provides ready access to descriptions of exemplary programs, research and development efforts, and related information that can be used in developing more effective educational programs.

ERIC produces a microfiche collection of current research findings, project reports and unpublished manuscripts. Copies of these materials are distributed to hundreds of libraries throughout the U.S. A complete set is available at the University of Maine at Orono. ERIC also provides paper copies of the same documents, which may be ordered from the ERIC Document Reproduction Service. Resources in Education (RIE), is a monthly guide to articles in more than 700 educational

journals, also indexed by subject and author.

The two indexing and abstracting tools, RIE and CIJE, together constitute by far the most comprehensive guide to current educational publications in the U.S. These tools are available in most large libraries throughout the U.S.

The ERIC system is relatively easy to use. The reference librarians in any library which has RIE and CIJE can provide the brief instruction necessary to get started. There are also two publications available from the National Institute of Education which provide an introduction to the system for the new user:

> Brown, James W.; Sitts, Maxinck; and Yarborough, Judith. ERIC. WHAT IT CAN DO FOR YOU/HOW TO USE IT. Stanford, California: Stanford Center for Research and Development in Teaching, 1977.
>
> How to Use ERIC. Washington, D.C.: National Institute of Education, n.d.

There is also an excellent self-study unit entitled ERIC: What It Is, How To Use It. This self-study unit takes approximately two hours to complete and allows the user to complete a short simulated search. This unit is available through the ERIC Clearinghouse for Social Studies/Social Science Education located in Boulder, Colorado.

Computer-Based Searching

The manual search for references relating to a particular topic can be a very time consuming process. This same process can be executed by means of a computer-based search. The

computer provides an opportunity to search through thousands of references in a very short period of time.

There are several companies which currently provide search services. Most large research libraries subscribe to one or more of these services. The normal procedure is to contact a reference librarian who can arrange a computer-based search for any patron.

Some types of topics are particularly appropriate for computerized literature searching.

- Topics that require the coordination of two or more distinct concepts (e.g., "The effect of parental divorce on an adolescent's self esteem" Concept A: Divorce. Concept B: Self-esteem. Concept C: Adolescence).
- Topics so new or so specialized that they may not appear as subject headings in printed indexes (e.g., "skyjacking" or "splinter skills in children").
- Topics that may be stated in so many ways that manual searching of a key-word-in-concept index would be extremely time-consuming (e.g., the topic "electron probe micro-analysis" is expressible in at least a dozen different ways, including "X-Ray micro-analysis" and "microprobe analysis").
- Topics that are relatively narrow in scope (e.g., A topic suitable in scope would be "DDT residues in milk." A topic too broad in scope would be

"pesticide residents in food.") With a very broad topic it is usually more efficient to consult a book or review.

The actual search is usually run by a specially trained librarian. The user meets with the librarian to plan the search. The librarian will help the user define the topic and translate the topic into the unique nomenclature for that particular type of search.

The files of information which are available through the computer are called data bases. These data bases are virtually the same information which would be found in a printed index such as Research in Education or the Current Index to Journals in Education.

The execution of the search provides several alternatives not normally available to the person conducting a manual search. The major alternative is the ability to simulataneously search for two or more topics. Typically the manual search is conducted for one topic at a time. The user then must read the citation for each reference to determine if it covers what the user really wants. For example, the user may be interested in self-paced programs for adult audiences. With a manual search the user would first need to find all of the articles dealing with self-paced programs and then read each citation to determine if it dealt with adults. By employing a computer-based search the user can look simultaneously for publications dealing with both self-paced

programs and adult audiences. By looking for both topics simultaneously the computer will produce a list of more relevant topics thereby further reducing the search time.

A typical search will proceed through a sequence of events. The user completes a search form. The search specialist or searcher works with the user to refine the question statement. The searcher develops a search profile, i.e., a combination of search terms expressing the content of the question in terms appropriate to the data base to be used. The searcher, ideally with requester present, enters the seach profile into a computer system via a computer terminal. As each term or combination of terms is entered, the system reports the number of corresponding citations in the data base. The computer prints a sample of the citations retrieved by the search profile. The requester and the searcher examine the sample citations and modify the profile if necessary. After a satisfactory sample of citations has been retrieved, the searcher orders the entire set of citations. These are printed off-line and mailed to the searcher.

Computer-based searching has many advantages when compared to a manual searching. Computer searching can be much faster for many search topics. If time is valuable the computer-based search can also be less expensive even after machine costs are paid.

The result of a computer search is a printed bibliography, sometimes including abstracts. This can save hours with activities such as mindless copying citation numbers and bibliographic data, and turning pages in indexes.

The computer-based search also has some disadvantages. Most data bases cover only 7-10 years of the literature. A trained searcher is usually essential to make efficient use of a computer-based system. There are training, equipment and operating costs. Irrelevant citations are generally retrieved in addition to those desired. This happens because of imprecise use of terms in the literature, poorly formulated search profiles and defective indexing systems or practices. Of course, as in manual searching, the irrelevant items may be ignored.

After considering all of the advantages and disadvantages, a computer-based search is probably a good methodology for educators.

Summary

The retrieval of information on educational innovations can provide educators with valuable information. By retrieving this information the educators can benefit from the experiences in other schools.

Selected Readings

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Davis, James E. ERIC: What It Is, How To Use It. Boulder, Colorado: ERIC Clearinghouse for Social Studies/ Social Science Education, 1974.

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Elman, Stanley A. "Cost Comparison of Manual and On-Line Computerized Literature Searching." Special Libraries, Jan. 1975, p. 12-18.

Gardner, Jeffrey J. and Wax, David M. "On-line Bibliographic Services." Library Journal, Sept. 15, 1976, p. 1827-1832.

Rogers, Frank B. "Computerized Bibliographic Retrieval Services." Library Trends, July 1974, p. 73-88.

Wanger, Judith. Impact of On-Line Retrieval Services: A Survey of Users, 1974-75. System Development Corporation, 1976.

Williams, Martha E.; and Rouse, Sandra H. Computer-Readable Bibliographic Data Bases - A Directory and Data Source Book. American Society for Information Science, 1976.

Appendix A

BIBLIOGRAPHIC CHAIN

. . . There are three distinct but interrelated phases that are represented by the links in the Bibliographic Chain (Doyle & Grimes, 1976).

Phase I: Human and Institutional Resources are "packages" of information only in the most general sense. At this stage the information basically resides within the minds of people, either individually (as with consultants) or in groups (as with the staff of a project). These resources include individual and collective thoughts, observations, deductions, investigations, assumptions, and unplanned discoveries.

Phase II: Printed Materials With Intellectual Content begins with a human idea which has reached the point where it can be committed to print or another information medium. This act produces, in general, chronological sequence work-in-progress reports, unpublished studies, periodical articles, reports and monographs, annual reviews and state-of-the-art reports, books, and eventually encyclopedic summaries of the resulting body of knowledge.

Phase III: Printed Materials Which Have No Intellectual Content of their own but which provide access to those Phase II materials which do possess actual information include: indexing and abstracting services, as well as bibliographic reviews. Annual reviews and state-of-the art reports also may provide the identification function in addition to some actual content. They are therefore included in both Phases II and III. Phase III materials *lead to information* but do not normally contain information themselves. They are basically *location tools*. (Italics added.)

It should be noted that the relationship of Phases II and III has no direct relation to the time lag inherent in the bibliographic chain. This is because the printed items with no intellectual content of their own often parallel those materials with intellectual content, as the purpose of the former is to provide effective access to the latter. The time lag inherent in the bibliographic chain lies mainly in the movement of ideas through and between Phases I and II.

Human Resources. A human resource is an individual who can supply certain skills and competencies without necessarily speaking for any particular organizational structure. Generally, human resources are researchers, scholars, or consultants who might be connected with universities; research and development departments in business and industry; independent researchers and those involved formally or informally in conceptualizing and generating ideas; and local, state, and national government agencies addressing the concerns of the citizenry in general.

Institutional Resources. Institutional resources are those formalized organizational structures to which an item of information or an idea moves once it has shown that it has the capability of standing on its own, apart from the human resource which generated it. There are two general subcategories of institutional resources--agencies and projects.

Agencies are organizations which have an ongoing administrative structure and staff, and both short- and long-range programs. The agency may have a profit or nonprofit orientation and single or varied interests. Its essential character is that it is intended to be an ongoing entity.

Projects, unlike agencies, can be identified by their relatively short and circumspect nature. They usually deal with a rather restricted focus and may be one aspect of a larger, more permanent organization or effort.

Work-in-Progress Documents. Work-in-progress refers to those resources which give access to the current work of researchers and scholars. This work could be at various stages of development, but not to the point where it is ready for publication within the next links in the chain. This type of information often aids people working in parallel or complementary areas, allows for interaction within the "invisible college," and helps avoid unnecessary duplication of effort. Work-in-progress documents are often in typescript form.

Unpublished Studies. Unpublished studies are research materials that have reached a completed state but which are not intended for formal publication, at least in their present form. This category includes an organization's internally produced reports, informally circulated items, graduate essays, theses, and doctoral dissertations.

Periodicals. Periodicals include magazines, journals, newsletters, commercial loose-leaf services, and similar serial items which appear at intervals. These publications contain articles of various lengths and levels of interest. Journals may publish lengthy and sophisticated articles that are de facto reports. Magazines and newsletters may publish

only descriptions, abstracts, and condensations. The range of content treatment in this category of information format is extremely varied. The common characteristic is the periodic nature of the publications. Periodical articles usually appear simultaneously with unpublished materials or shortly thereafter.

Reports and Monographs. Once unpublished studies have been evaluated and revised, they are often formally published as reports or monographs. These are intended for general, rather than informal circulation. They are frequently part of an irregular series published by professional associations, university, commercial publishers, and research and development agencies. Reports may be available on an open access or restricted basis, depending on their nature, content, and intent.

Indexing and Abstracting Services. Indexing and abstracting services are the first of the surrogate information formats. They have no intellectual content of their own, but are location tools which "stand in the stead of," and provide access to, actual reference resources.

Indexes usually appear within a few months of the serial literature that they control, but the time lag is greater for abstracting services. Abstracts must be prepared after the item is read, a time-consuming process unless done by the author or publisher at the outset. Indexes and abstracting services usually provide subject, author, and title access.

Bibliographic Lists and Essays. Bibliographic lists are bibliographies in a given field or on a given topic, usually annotated and selective. Bibliographies may be published separately or as a part of a larger work for reference purposes.

The bibliographic essay is a special type of bibliographic list which provides an overview of an area by snynthesizing the content of the area in narrative form, and providing citations to the sources of the ideas or information provided. The bibliographic essay differs from annual reviews and state-of-the-art reports in that it may deal with a field or topic over time rather than during a restricted period. The main intent, however, is to lead to other reference resources.

Annual Reviews and State-of-the-Art Reports. These are surrogate publications which do have intellectual content. Their intent is to collect all current and pertinent published material (since the last review or report on the major accomplishments, problems, and trends in that field for the period of time covered. Their purpose is to give an overview and citations for further reference and exploration. It is the second aspect which places them in the category of location tools. The first aspect provides some measure of intellectual content, though without benefit of the

perspective and process of trial over time which results in the content of an encyclopedic summary.

Books. Books are usually a revised version of formal report literature which reflects further study, with additional background information and interpretation added. The time lag is generally greatest in the area of scholarly books on research topics. Books are the most frequently used of the reference resources because their major intent is to communicate something of importance to an audience of some size or to provide an in-depth comprehensive treatment of a topic of some significance.

Encyclopedic Summaries. This is the last major link in the bibliographic chain, and the one in which the time lag is greatest. Encyclopedic summaries are designed to give a broad overview of a whole field. Due to infrequent publication and updating policies, in addition to the lead time involved in their production, the content of encyclopedic summaries is usually three or more years out of date at the time of publication. This factor is not a critical one, however, since only those items of tested significance should appear in an encyclopedic summary.

SAMPLE PUBLICATION CITED IN RIE

FINAL REPORT

An In-School Job Placement Service for Secondary School Students Exemplary Project

Conducted Under
Part C and Part D of Public Law 90-576

The project reported herein was performed pursuant to a grant from the Bureau of Vocational Education, Maine Department of Educational and Cultural Services. Grantees undertaking such projects under State department sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions do not, therefore, necessarily represent official Department of Educational & Cultural Services position or policy.

Kenneth C. Gray
Director of Guidance
Mt. Ararat School
Topsham, ME 04086

June 30, 1975